

Subject: Mathematics

Grade: Fourth

Standard: #6 Spatial Sense

Key Concept: Students gain an understanding of symmetry.

Generalization: Students identify line symmetry.

Background:

The teacher reviews the concept of symmetry and illustrates line symmetry. Groups of four students are given a picture and asked to identify the objects in the picture which are symmetric and/or have line symmetry. Note, the groups need not be given the same picture and it would be more interesting if each group had a different picture. Students share their results with the class.

This lesson is adapted from the book Math for Humans, ISBN#0-9656414-7-3.

This lesson is tiered in *process* according to Howard Gardner's *Multiple Intelligences*.

Tier I: ***Bodily-Kinesthetic Learners***

In groups of four, these students are given the rules for the "Mirror-Sculpture" game as described in the book. The game has students form a human design which is symmetric as viewed from a spot in the room by a nonparticipating person. After a symmetric design has been identified, each student draws a picture of the sculpture on a piece of paper.

Supply each group of four students, a picture and/or description of other sculptures which contain line symmetry. Have the students duplicate the design with their bodies and identify the lines of symmetry.

## **Tier II: *Visual Learners***

In pairs the students play the “Copycat” or the “Nosymm” game as described in the book. The “Copycat” game has pairs of students create a line-symmetric design using paper with a square grid and colored markers. While the “nosymm” game has one student in the pair create a symmetric design while the other student destroys the symmetry. After creating their designs, have the students share each design with other pairs in the same tier.

Supply the students with several pictures which contain line-symmetric designs and have the students identify all the lines of symmetry. Depending on the sophistication of these students you may need to vary the level of complexity of the designs.

## **Tier III: *Logical-Mathematical Learners***

These students will search through magazines, newspapers, and the yellow pages to find logos and trademarks for companies and organizations. Students trace each symbol and indicate the symmetry in each design.

Supply the students with several pictures of hubcaps and have them identify all the lines of symmetry.

## **Tier IV: *Naturalistic Learners***

These students will search through magazines and books which pertain to nature and/or science. Students will identify items from nature, plants and animals, which are symmetric. For those items which contain line symmetry, students will draw a replica of the item and identify the symmetries.

Supply the students with several pictures of objects in nature and have them identify the lines of symmetry.

## **Assessment:**

Teacher should create a rubric for evaluating the identification of the lines of symmetry in the supplemental pictures.